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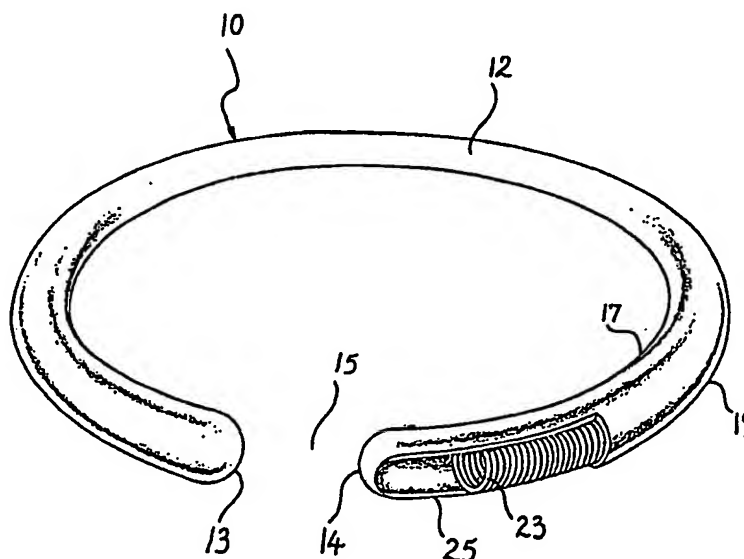
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(21) International Application Number: PCT/AU89/00545 (22) International Filing Date: 20 December 1989 (20.12.89) (30) Priority data: PJ 2115 23 December 1988 (23.12.88) AU (71) Applicant (for all designated States except US): LEADON PTY LTD. [AU/AU]; Unit 3, 61 Walters Drive, Osborne Park, W.A. 6017 (AU). (72) Inventor; and (75) Inventor/Applicant (for US only): WILDON, Michael, Peter [AU/AU]; 36 Mills Road, Darlington, W.A. 6070 (AU). (74) Agents: HARWOOD, Errol, John et al.; Wray & Associates, P.O. Box 6292, East Perth, W.A. 6004 (AU).		(81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), ES (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), US. Published <i>With international search report.</i>

(54) Title: A MARKING DEVICE



(57) Abstract

A marking device (1) intended primarily for marking an anastomosis site of a coronary artery graft. The marking device comprises a generally annular body (12) having a circumferential opening (15) between two spaced apart ends (13, 14) of the body. The body is resiliently flexible in construction so that the opening (15) can be expanded to facilitate placement of the body on the grafted artery at or near the anastomosis site. The body is radiopaque so that it can be located using radiographic procedures.

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"A Marking Device"

TECHNICAL FIELD

THIS INVENTION relates to a marking device for placement on an object for the purpose of marking a location on the object.

The invention has been devised particularly, although not exclusively, for use in surgical procedures to mark the anastomosis site of a coronary artery graft.

BACKGROUND ART

In surgical procedures involving coronary artery grafts, it is common to mark the anastomosis site with a marking device which is radiopaque so that the site can be easily located afterwards, particularly for placement of an angiographic catheter. One form of marking device currently in use comprises a clip of stainless steel or other radiopaque material which is attached to tissue in the vicinity of the anastomosis site. Another form of marking device comprises a thread of radiopaque material which is wrapped around the grafted vessel in the vicinity of the anastomosis site.

DISCLOSURE OF INVENTION

The present invention seeks to provide a convenient and useful alternative to marking devices currently in use.

In one form the invention resides in a marking device comprising a body which is generally annular save for a pair of spaced apart ends which define an opening extending between the inner and outer peripheries of the body, said body being of resiliently flexible construction

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for expansion of said opening to facilitate placement of the body about an object.

Preferably, said ends are rounded for the purpose of avoiding damage to tissue.

Preferably, said annular body comprises a core of resiliently flexible material encased within a covering.

Preferably, said core has high radiopacity. In this connection, the core preferably comprises a spirally wound spring.

Preferably, the covering is manufactured from a pellathane polyurethane or other suitable plastics material. The covering is preferably in the form of a tube sealed at its ends.

Preferably, the spirally round spring is received within the tube but is not otherwise attached to the tube.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood by reference to the following description of one specific embodiment thereof as shown in the accompanying drawings in which:-

Fig. 1 is perspective view (on an enlarged scale) of a marking device according to the embodiment, with part of the outer covering cut away to reveal the interior thereof;

Fig. 2 is a sectional view of the marking device;

Fig. 3 is a fragmentary sectional view of the marking device; and

Fig. 4 is a schematic view illustrating two marking devices according to the embodiment in position on a coronary artery graft for marking purposes.

BEST MODE OF CARRYING OUT THE INVENTION

The embodiment shown in the drawings is directed to a marking device 10 for use in marking an anastomosis site of a coronary artery graft 11 (Fig. 4) to facilitate future angiographic catheter placement in the coronary artery graft.

The marking device 10 comprises a body 12 which is generally annular save for a pair of spaced apart ends 13, 14 which defined an opening 15 extending between the inner and outer peripheries 17 and 19 respectively of the body. The inner periphery 17 of the body defines a central hole 21 which in this embodiment is 11 mm in diameter. The two ends 13 and 14 are rounded for the purpose of avoiding tissue damage.

The body 12 is of resiliently flexible construction and comprises a resiliently flexible core 23 encased within a covering 25. The core 23 is radio-opaque and in this embodiment is in the form of a spirally wound spring made from 316 L stainless steel spring wire filament of 0.014 mm diameter. The covering is in the form of a tube of pellathane polyurethane having an outside diameter of 1 mm and an inside diameter of 0.6 mm. The spring is received within the tube but is not physically attached to the tube. The tube is sealed at both ends to retain the spring in position.

The resilient nature of the body 12 enables the opening 15 to be expanded to facilitate placement of the marking

device around the circumference of the artery graft at or near the anastomosis site. The body 12 can then be allowed to return to its normal position and can be attached to the graft by any suitable means such as suturing. Fig. 4 of the drawings illustrates two marking devices in position on the artery graft, each marking an anastomosis site. In the event that it is necessary to locate an anastomosis site at some later time, the radiopacity of the marking device facilitates identification of the location of the marking device using radiographic procedures.

It should be appreciated that the scope of the invention is not limited to the scope of the embodiment described.

THE CLAIMS defining the invention are as follows:-

1. A marking device comprising a body which is generally annular save for a pair of spaced apart ends which define an opening extending between the inner and outer peripheries of the body, said body being of resiliently flexible construction for expansion of said opening to facilitate placement of the body about an object.
2. A marking device according to claim 1 wherein said ends are rounded.
3. A marking device according to claim 1 or 2 wherein said annular body comprises a core of resiliently flexible material encased within a covering.
4. A marking device according to any one of the preceding claims wherein said core has high radiopacity.
5. A marking device according to claim 4 wherein said core comprises a spirally wound spring.
6. A marking device according to claim 3, 4 or 5 wherein said covering comprises a tube sealed at its ends.
7. A marking device according to claim 6 wherein said spirally round spring is received within said tube but is not otherwise attached to the tube.
8. A marking device substantially as hereindescribed with reference to the accompanying drawings.

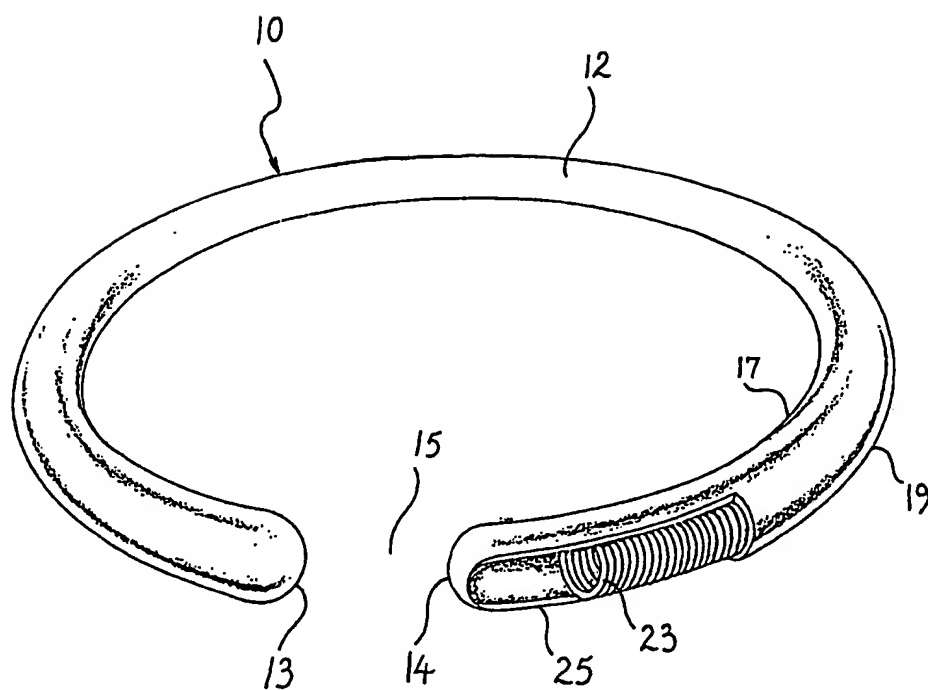


Fig. 1.

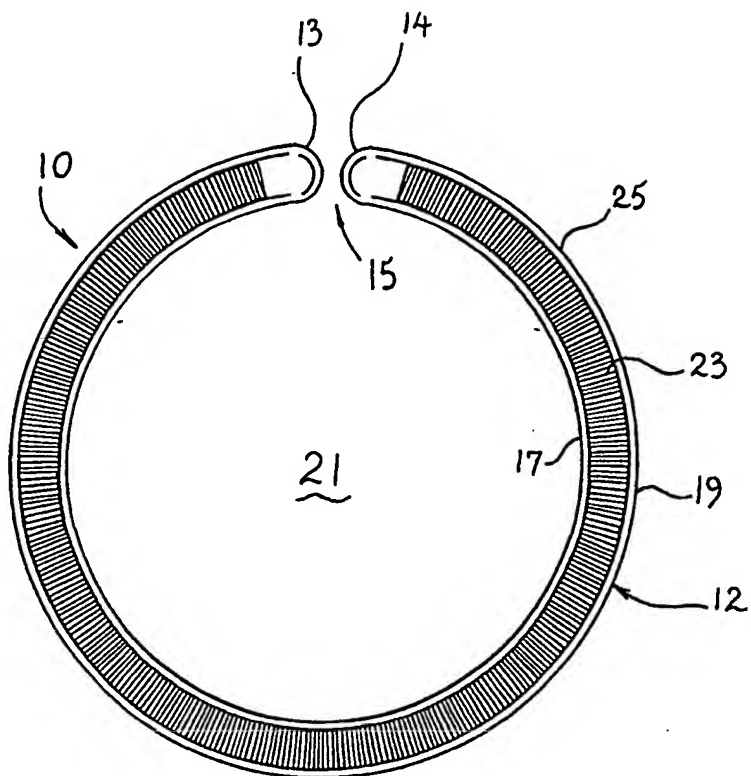


Fig. 2.

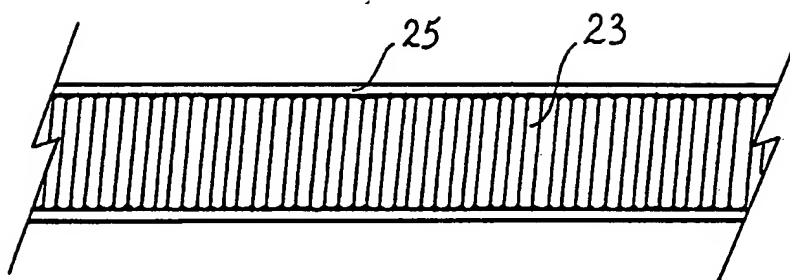


Fig. 3.

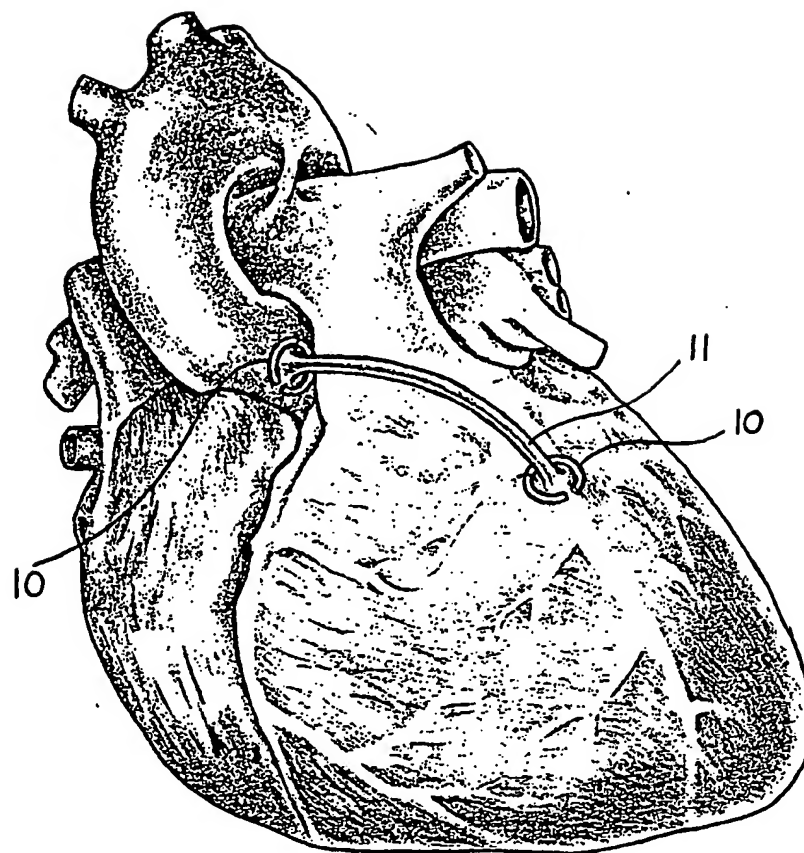


Fig. 4.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/AU 89/00545

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) 6

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. Cl.⁴ A61B 19/00

II. FIELDS SEARCHED

Minimum Documentation Searched 7

Classification System	Classification Symbols
IPC	A61B 19/00

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched 8

AU: IPC as above, F16B 21/18

III. DOCUMENTS CONSIDERED TO BE RELEVANT 9

Category*	Citation of Document, with indication, where appropriate, of the relevant passages 12	Relevant to Claim No 13
A	US,A, 4693237 (HOFFMAN et al) 15 September 1987 (15.09.87)	
A	US,A, 4681110 (WIKTOR) 21 July 1987 (21.07.87)	
A	US,A, 4202349 (JONES) 13 May 1980 (13.05.80)	
A	US,A, 4041931 (ELLIOTT et al) 16 August 1977 (16.08.77)	

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IV. CERTIFICATION

Date of the Actual Completion of the
International Search
7 March 1990 (07.03.90)

Date of Mailing of this International
Search Report

9 March 1990

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